

Naples Zoological Station, will send contributions of great scientific value.

France, the other day only, consented to the official appointment of her Consul to look after the interests of the oyster cultivators who are contributing an important feature.

In the Chinese and Japanese annexe, on the east, will be seen a large collection of specimens (including the gigantic crabs) which has been collected, to a great extent, at the suggestion of Dr. Günther of the British Museum.

It is at the same time fortunate and unfortunate that a similar Fisheries Exhibition is now being held at Yokohama, as many specimens which have been collected specially for their own use would otherwise be wanting; and on the other hand, many are held back for their own show.

China, of all foreign countries, was the first to send her goods, which arrived at the building on the 30th ultimo, accompanied by native workmen, who are preparing to erect over a basin contiguous to their annexe models of the summer-house and bridge with which the willow-pattern plate has made us familiar; while on the basin will float models of Chinese junks.

Of British colonies, New South Wales will contribute a very interesting collection placed under the care of the Curator of the Sydney Museum; and from the Indian Empire will come a large gathering of specimens in spirits under the superintendence of Dr. Francis Day.

Of great scientific interest are the exhibits, to be placed in two neighbouring sheds, of the Native Guano Company and the Millowners' Association. The former will show all the patents used for the purification of rivers from sewage, and the latter will display in action their method of rendering innocuous the chemical pollutions which factories pour into rivers.

In the large piece of water in the northern part of the gardens, which has been deepened on purpose, apparatus in connection with diving will be seen; and hard by, in a shed, Messrs. Siebe, Gorman & Co. will show a selection of beautiful minute shells dredged from the bottom of the Mediterranean.

In the open basins in the gardens will be seen beavers, seals, sea-lions, waders, and other aquatic birds.

From this preliminary walk round enough has, we think, been seen to show that the Great International Fisheries Exhibition will prove of interest alike to the ordinary visitor, to those anxious for the well-being of fishermen, to fishermen themselves of every degree, and to the scientific student of ichthyology in all its branches.

The economic question of the undertaking we have left untouched.

NOTES

IT will be seen from a communication in another column that the Council of the British Association have virtually decided that that body is bound to hold its meeting in Canada in 1884. From Sir A. T. Galt's letter it is evident that our Canadian fellow-subjects have already arranged to give the Association a hearty and generous welcome; and now that Canada seems inevitable, we hope that as many members as possible will make up their minds to be present. The expenses for visitors will be reduced to a minimum, and the travelling expenses of officials, to the number of fifty, to *nil*. A magnificent programme for three weeks' excursions has been sketched, and the expenses connected with them will be confined to hotel charges, carriages, &c., the railway companies having handsomely offered to convey members free of charge.

THE Academy of Sciences held its Annual Meeting on April 2, M. Jamin in the chair. He pronounced the *éloge* of the three Academicians who died last year, viz., MM. Liouville,

Bussy, and Decaisne. M. Blanchard, filling the room of M. Dumas, who, although present, was unable to deliver any speech, read the list of laureates. The number of prizes offered for public competition is yearly enlarging; not less than three of them—Monti, Machado, and Francœur—were delivered for the first time. The number of verdicts which the commission had to render was thirty-three. In nine cases the commission declared no memoir was worthy to take a prize; the competitions were in general adjourned to 1885, and a certain sum of money was given to some semi-successful candidates. In two instances the merit of the candidates was acknowledged so great that two prizes were delivered instead of one. These two cases were in statistics and mathematics; the question put was to give a theory of the partition of numbers in five squares. Amongst the prizes lost is included the famous Prix Breaux, for the cure of cholera. The interest was divided amongst four pupils of M. Pasteur's. The Poncelet Prize has been taken by M. Clausius, and the Voltz Prize by Mr. Huggins and M. Crüls, a Brazilian, for their spectroscopic work.

It was announced at the above-mentioned meeting that the great mathematical prize of the French Academy had been awarded to the late Prof. H. J. S. Smith for his dissertation on the representation of a number as the sum of five squares. The subject for the prize was announced in the *Comptes Rendus* of the Academy in February of last year, and, according to custom, the essays were to be sent in before June 1—each dissertation bearing a motto and being accompanied by a sealed envelope having the motto on the outside and the writer's name inside. The envelopes of the unsuccessful candidates are destroyed unopened. Prof. Smith's dissertation bore as its appropriate motto:—

"Quotque, quibusque modis possint in quinque resolvi
Quadratos numeri pagina nostra docet."

There were three candidates, and the value of the prize is 3000*fr*. The theory of numbers, to which the prize subject related, is one to which Prof. Smith had devoted the greater part of his life, and in which he occupied an almost unique position; with the exception of Prof. Kummer of Berlin, there is no one whose contributions to the science could be compared to his, and this posthumous mark of the appreciation on the Continent of the value of his work is all the more satisfactory as the great prize has never before, we believe, been awarded to an English mathematician. The complete solution of the important problem proposed by the French Academy had been obtained by Prof. Smith sixteen years ago as part of a far more general investigation, and the results were published by him in the *Proceedings of the Royal Society* in 1868, but without demonstration. These researches seem, however, to have escaped the notice of the French mathematicians. When the subject of the prize was announced last year, Prof. Smith extracted from his manuscript books the demonstrations of the propositions relating to the five-square problem, and it is to the dissertation so formed that the prize has been awarded. No more striking instance of the extent to which Prof. Smith had carried his researches, or of his great mathematical genius, could be given than is afforded by the fact that a question considered by the French Academicians of so much importance to the advancement of mathematical science as to be chosen for the subject of the "Grand Prix" should have been completely solved by him as only a particular case in the treatment of a general and even more intricate problem. In 1868 Prof. Smith won the Steiner Prize of the Berlin Academy, so that had he but lived till now he would have been "laureate" of the Academies of both Paris and Berlin.

THE removal of the natural history collection from Great Russell Street to its new quarters at South Kensington, on the

site of the Great Exhibition of 1862, has been proceeding gradually during the last two years, and is now rapidly approaching completion. Several of the rooms, formerly stocked with birds, fishes, &c., have been already emptied.

LIEUT. SAMUEL W. VERY, U.S.N., and Dr. Orlando B. Wheeler, the two principal members of the expedition sent by the United States Government to Santa Cruz, Patagonia, to observe the recent transit of Venus, arrived in Liverpool on Friday, by the Pacific Steam Navigation Company's mail steamer *Patagonia*. Lieut. Very, who had charge of the expedition as chief astronomer, states that the expedition arrived off the mouth of the Santa Cruz River on November 2. The weather during the first fourteen days was very encouraging, but this was succeeded by nine days of overcast, disagreeable weather, with frequent and sharp showers of hail and rain. Fine weather again followed until the eventful morning of December 6, which broke cloudy and hazy. By half-past seven a.m., however, the clouds began to weaken, half an hour later the sun shone out dimly, and as the day advanced the weather improved, so that when it was time to take up stations for the first contact, the sun was almost entirely clear. All four of the contacts were observed both by Lieut. Very, with the large equatorial, and by Mr. Wheeler, with a smaller one; and during the transit 224 photographs were taken, with a continuous improvement in the results. By sunset the weather changed again for the worse, and the sun was not seen, except at intervals, for four or five days, during which time Lieut. Very was looking anxiously for observations for rating his chronometers. While the expedition was in camp the temperature changed to the extent of 19° in the course of every twelve hours. In the daytime the heat occasionally was oppressive, while at night the air was very cold, and the party had to sleep with double blankets and heavy clothing upon them. The Lieutenant speaks in the highest terms of the kindness and consideration shown to him by the Pacific Steam Navigation Company and the Customs authorities, both of whom, when they were informed of his business, put all possible facilities in his power.

THE next ordinary General Meeting of the Institution of Mechanical Engineers will be held on Wednesday, April 11, and Thursday, April 12, at 25, Great George Street, Westminster. The chair will be taken by the president, Percy G. B. Westmacott, at three o'clock on Wednesday afternoon, and at ten o'clock on Thursday morning. The following papers will be read and discussed:—On the strength of shafting when exposed both to torsion and end thrust, by Prof. A. G. Greenhill, of Woolwich; On modern methods of cutting metals, by Mr. W. Ford Smith, of Salford; On improvements in the manufacture of coke, by Mr. John Jameson, of Newcastle-on-Tyne; On the application of electricity to coal mines, by Mr. Alan C. Bagot, of London.

THE 21st meeting of the delegates of the French Learned Societies took place last week at the Sorbonne. M. Ferry, the French Premier, presided over the final meeting on March 31, and delivered, as is customary, an address. The Minister dwelt much on the circumstance that he had added to the four sections in existence a fifth, devoted to political economy, so that the meeting of the Learned Societies included every subject in human knowledge. He praised the Trustees of the British Museum for their fair dealing towards France in the matter of the Ashburnham manuscripts, and eulogised the French Government for their zeal in the promotion of knowledge, declaring that 60 millions of francs had been already spent for the rebuilding of French universities, and that 40 millions were to be spent shortly for the same purpose. The presidents of the several sections omitted to deliver their reports, and the proceedings terminated somewhat abruptly. The address was well received, but the unexpected silence of the presidents has taken the public by surprise, and has been unexplained as yet.

M. HERVÉ MANGON, President of the Bureau Central of French Meteorology, opened the Session of the Congress of Meteorologists on March 29 by reading a report on the working of the institution. This document states that, from a comparison made by the Bureau, its forecasts have been acknowledged good 83 times in each 100; that for the warning of tempests 207 had been sent to the seaports, out of which 100 had been fulfilled entirely, 65 partly, and 42 had not been warranted by the event. The president, who is a member of the French Legislative Assembly for La Manche, announces the intention of asking from Parliament an augmentation of credit.

MR. MUYBRIDGE has issued a prospectus of "a new and elaborate work upon the attitudes of man, the horse, and other animals in motion." As the expense of conducting these experiments is very great, Mr. Muybridge naturally waits until he obtains a sufficient number of 100-dollar subscriptions before entering upon them. Each subscriber of the sum will receive a large album containing the photographic results of the experiments. Their scientific and artistic value is so great that we trust Mr. Muybridge will receive sufficient encouragement to put his plan into execution. His address is Scovill Manufacturing Company, Publishing Department, 419-421, Broome Street, New York.

THE Warwick Museum has been enriched by the very valuable collection of local Liassic and Keuper fossils formed by the late Mr. J. W. Kirshaw, F.G.S., which it is intended to keep as a separate collection. The whole of the collection in the Museum has lately been classified and arranged by Mr. R. Bullen Newton, of the Natural History Museum, South Kensington.

HARTLEBEN'S "Elektrotechnische Bibliothek" has been further augmented by three volumes. They consist of two little books by Dr. Alfred von Urbanitzky, viz. "Die elektrischen Beleuchtungs Anlagen" and "Das elektrische Licht," and one by Herr W. P. Hauck, "Die galvanischen Batterien, Accumulatoren, und Thermosäulen."

ACCORDING to latest accounts, the eruption of Mount Etna is resuming activity. Enormous quantities of gas are thrown out, and slight shocks are again felt in the neighbourhood of Nicolosi.

THE second number of *Timchri*, the journal of the British Guiana Agricultural and Commercial Society is to hand; it completes the first volume. Among the contents we note the following:—Forest Conservancy in British Guiana, by M. McTurk, G. M. Pearce, and the Hon. W. Russell; Mount Russell in Guiana, by the Editor, Mr. Im Thurn; The Aspect and Flora of the Kaieteur Savannah, by G. S. Jenman; Notes on West Indian Stone Implements, by the Editor, with several coloured illustrations; British Guiana Cave-Soils and Artificial Manures, by E. E. H. Francis. There are also several interesting notes, and the reports of the Society's meetings. Among the notes is a letter from Dr. R. Schomburgk, of Adelaide, giving some interesting autobiographical details. Stanford is the London agent.

WE have received the first number of the new American monthly, *Science*, to which we heartily wish all success.

WHILE Western Europe enjoyed a mild autumn, very severe weather was experienced on the Ural. At Ekaterinburg the average temperature of October was four degrees lower than the average for forty five years, that is, $-3^{\circ}9$, instead of $+0^{\circ}9$, the lowest temperatures in October witnessed since 1836 having been but $-2^{\circ}4$ and $-3^{\circ}2$. For nineteen days the thermometer did not rise above zero, and it fell as low as $-19^{\circ}2$ and $-17^{\circ}9$.

ENTOMOLOGISTS generally, as well as those more particularly interested from their geographical position, will be pleased to learn that the long-expected Yorkshire List of Lepidoptera—on which Mr. Geo. T. Porritt, F.L.S., of Huddersfield, has for some time past been engaged—is now completed, and that the MS. is now being set up for the *Transactions of the Yorkshire Naturalists' Union*. Mr. Porritt, who has been assisted by the leading entomologists of the county, and who has also paid attention to the literature of the subject, has written what will probably be regarded as one of the best county catalogues of Lepidoptera extant. The diversity of soil and climate, geological and physical conformation, for which Yorkshire is famous, is once more illustrated by the richness in species which the lepidopterous fauna shows, 1344 out of the 2031 species recognised as British finding places in Mr. Porritt's catalogue.

THE following occurrence is worth notice:—The Weymouth and Channel Islands Steam Packet Company's mail steamer *Aquila* left Weymouth at midnight on Friday for Guernsey and Jersey on her passage across Channel. The weather was calm and clear, and the sea was smooth. When about one hour out the steamer was struck violently by mountainous seas, which sent her on her beam ends and swept her decks from stem to stern. The water immediately flooded the cabins and engine-room, entering through the skylights, the thick glass of which was smashed. As the decks became clear of water, the bulwarks were found to be broken in several places, one of the paddle-boxes was considerably damaged, the iron rail on the bridge was completely twisted, the pump was broken and rendered useless, the skylight of the ladies' cabin was completely gone, and the saloon skylight was smashed to atoms. The cabins were baled out with buckets, while tarpaulins were placed over the skylights for protection. Five minutes after the waves had struck the steamer the sea became perfectly calm. Several of the crew were knocked about, but none were seriously injured.

AT 10 p.m. on March 27 an earthquake occurred in and around the town of Miskolcz, Hungary. There were two separate shocks, and so distinctly were they felt that in the theatre, where the performance was going on, a panic ensued, the entire audience rising and rushing in terror towards the outlets. Many persons were injured, but, happily, no lives were lost. An earthquake was observed on March 12 in various parts of Italy. Reports now state that it was principally noticed in the Pellice valley, in the Po district, at Gessi, Varcita, Stura, and Coni. The direction of the shocks was from N.E. to S.W. In the plains the shocks were far less severe than in the mountains, where the foundations of the houses were shaken. Nobody, however, was hurt.

AN interesting discovery has been made at St. Pierre Quiberon (department of Morbihan). It consists of a new dolmen, one of those stone monuments of grey antiquity. It contained several entire human skeletons, besides a number of skulls, stone axes, a bronze pin, and some fragments of vessels.

THE large gold Cothenius medal, which the Imperial "Leopoldinisch-Carolinische" German Academy of Naturalists at Halle awards every year, has this time been given to Prof. F. Eilhard Schulze of Graz.

THE Berlin Mining Academy has purchased for the Mineralogical Museum of this Institution a so-called lightning tube or fulgurite, which was recently found near Warmbrunn. It measures nearly 2 metres in length. It is specially interesting, inasmuch as it shows a branch formation, about 30 centimetres from its end, measuring half a metre in length. The fulgurite was found after a severe thunderstorm in a sandhill and in a vertical position.

A BRILLIANT meteor was observed at Carlsruhe on March 5 at 8.9 p.m. It was about twice as bright as Venus at her greatest brilliancy. Its direction was S.S.W. to N.N.E.; it left a trail of yellowish red colour and of several degrees in length. The phenomenon finally disappeared in the constellation of Cassiopeia, developing little cloudlets at its disappearance.

AT Salez (canton of St. Gallen) some sixty bronze hatchets have been found imbedded in the ground only one metre deep. Their age is stated to be at least 2500 years.

THE additions to the Zoological Society's Gardens during the past week include an Arabian Baboon (*Cynocephalus hamadryas* ♀) from Arabia, presented by Mr. F. E. Goodner; a Sharp-tailed Grouse (*Tetrao phasianellus*) from North America, presented by Mr. Henry Nash; two Sea Mice (*Aphrodite aculeata*) from British Seas, presented by Mrs. A. Browning; an Olive Weaver Bird (*Hyphantornis capensis*) from South Africa, presented by Mr. Edward Ling; two Bonnet Monkeys (*Macacus radiatus* ♂ & ♀) from India, deposited; a Red-vented Parrot (*Pionus menstruus*) from South America, a Sordid Parrot (*Pionus sordidus*) from Venezuela, purchased; a Long-eared Fox (*Otocyon lalandii*) from South Africa, received on approval; a Sambur Deer (*Cervus aristoteli* ♂ & ♀), an Axis Deer (*Cervus axis* ♀), born in the Gardens.

OUR ASTRONOMICAL COLUMN

THE GREAT COMET OF 1882.—Herr Stechert has continued his ephemeris of this comet from the elliptical elements by Dr. Kreutz, which still agree pretty nearly with observations. We extract as follows:—

		R.A.		Decl.	Log. distance from	
		h.	m.	s.	Earth.	Sun.
April	9	5	59	32	0° 43' 1"	0° 57' 8"
	11	6	0	30	8 29 5	
	13	—	1	30	8 16' 5"	0° 60' 84"
	15	—	2	33	8 3 9	0° 58' 43"
	17	—	3	37	7 51' 9"	0° 61' 91"
	19	—	4	43	7 40' 4"	0° 58' 98"
	21	—	5	50	7 29' 3"	0° 62' 94"
	23	—	6	59	7 18 8	0° 59' 52"
	25	—	8	10	7 8' 7"	0° 63' 93"
	27	—	9	22	6 59' 1"	0° 60' 05"
	29	—	10	35	6 50' 0"	0° 64' 87"
May	1	6	11	50	— 6 41' 3"	0° 60' 57"

Assuming the intensity of light = 1, on February 8, when Prof. Schmidt last saw the comet with the naked eye at Athens, the intensity on April 9 will be 0°234, and on April 29, 0°163.

From September 8, the date of the first accurate observation at the Royal Observatory, Cape of Good Hope, to the middle of last month, the comet had described a heliocentric or orbital arc of 339½°; no other comet since the celebrated one of 1680 has passed over so large an arc of its orbit while under observation. Between Kirch's first observation on the morning of November 14, 1680, and the last observation by Sir Isaac Newton on March 19, 1681, that body traversed a heliocentric arc of 345°.

VARIABLE STARS.—Mr. G. Knott has observed three more minima of Ceraski's variable U Cephei. The resulting times of minima are—

		h.	m.	
1883,	March 12,	11	49	G.M.T. ... Magnitude 9.4
	" 22,	11	10	" ... " 9.45
	April 1,	10	29	" ... " 9.45

Mr. Knott remarks that the star is not a very easy one to observe, and it is not therefore an easy matter to disentangle errors of observation from real irregularities in the light curve.

On March 31 and April 1 he found the variable star R Coronæ Borealis very visible to the naked eye, and nearly equal to π Coronæ. "It has presumably brightened up further since Schmid's observations towards the end of last year" (*Ast. Nach.* No. 2491). π Coronæ is a sixth magnitude according to Argelander and Heis. The variability of this star was established by Pigott in 1795, but its fluctuations are exceedingly irregular.